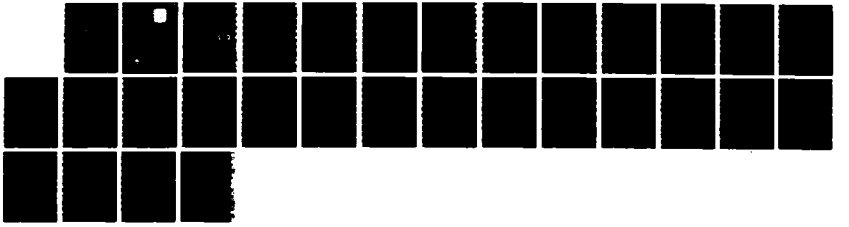
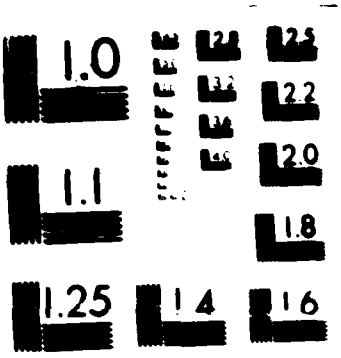
AD-A188 154 EXPEDITIONARY AIRFIELD CONCEPT - A CALL FOR MODERNIZATION(U) ARMY WAR COLL CARLISLE BARRACKS PA J E HATCH 23 MAR 87 1/1

UNCLASSIFIED F/G 1/5 NL





STUDENT ESSAY

EXPEDITIONARY AIRFIELD CONCEPT--A CALL FOR MODERNIZATION

BY

LIEUTENANT COLONEL JAMES E. HATCH

23 MARCH 1987

US ARMY WAR COLLEGE, CARLISLE BARRACKS, PENNSYLVANIA

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A180 153	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Expeditionary Airfield Concept--A Call for Modernization		5. TYPE OF REPORT & PERIOD COVERED Individual Essay
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) LTC James E. Hatch, USMC		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army War College Carlisle Barracks, PA 17013		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army War College Carlisle Barracks, PA 17013		12. REPORT DATE 23 March 1987
		13. NUMBER OF PAGES 26
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution is unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

An analysis of two aspects of the Marine Corps' expeditionary airfield concept--logistic support and airfield survival suggests that existing procedures are extremely vulnerable vis-a-vis the modern threat. Threat capability is steadily growing as a result of the development of accurate, long range, stand-off delivery systems, capable of inflicting severe damage to expeditionary facilities. Existing methods of establishing airfields ashore are based on operational concepts developed in the Pacific during World War II,

Continued

Item 20 Continued.

when air supremacy was, in most cases, the norm. Refinement of the concept, subsequent to the conclusion of World War II, has not reflected a modification of the basic assumption of air supremacy. Tactical aviation, an essential ingredient in support of the Marine air-ground task force (MAGTF) ashore, may be, in the final analysis, dependent on the support and survival of the expeditionary airfield. An option that alleviates existing logistical shortfalls is addressed. Survival shortfalls are identified for future resolution.

USAWC MILITARY STUDIES PROGRAM PAPER

EXPEDITIONARY AIRFIELD CONCEPT--A CALL FOR MODERNIZATION

An Individual Essay

by

Lieutenant Colonel James E. Hatch USMC

Colonel R. M. D'Amura, USMC
Project Advisor

US Army War College
Carlisle Barracks, Pennsylvania 17013
23 March 1987

ABSTRACT

AUTHOR: James E. Hatch, LtCol, USMC

TITLE: Expeditionary Airfield Concept--A Call for Modernization

FORMAT: Individual Essay

DATE: 23 March 1987 **PAGES:** 21
CLASSIFICATION: Unclassified

An analysis of two aspects of the Marine Corps' expeditionary airfield concept--logistic support and airfield survival suggests that existing procedures are extremely vulnerable vis-a-vis the modern threat. Threat capability is steadily growing as a result of the development of accurate, long range, stand-off delivery systems, capable of inflicting severe damage to expeditionary facilities. Existing methods of establishing airfields ashore are based on operational concepts developed in the Pacific during World War II, when air supremacy was, in most cases, the norm. Refinement of the concept, subsequent to the conclusion of World War II, has not reflected a modification of the basic assumption of air supremacy. Tactical aviation, an essential ingredient in support of the Marine air-ground task force (MAGTF) ashore, may be, in the final analysis, dependent on the support and survival of the expeditionary airfield. An option that alleviates existing logistical shortfalls is addressed. Survival shortfalls are identified for future resolution.

EXPEDITIONARY AIRFIELD CONCEPT--A CALL FOR MODERNIZATION

INTRODUCTION

> 'Close air support plays a critical role in the amphibious operation... Even after the operation progresses inland, the relatively light artillery of a MAGTF relies upon aircraft to deliver heavy ordnance upon the enemy, both close in and beyond the fire support coordination line. Whatever the future holds, this firepower must be available or the success of any amphibious assault may be in question.'
> (FMFM 5-4: Offensive Air Support)

General. Marine Corps amphibious doctrine calls for the aviation combat element (ACE) of the Marine air-ground task force (MAGTF) to move ashore as rapidly as possible in the conduct of an amphibious assault. When sufficient operational airfields and facilities are not available ashore, the ACE relies on the establishment of temporary, expedient runways and support facilities.

Marine aviation has pioneered a unique and successful concept for the establishment and operation of expeditionary airfields situated close to the ground combat. Because of this success, aviation planners have concentrated their efforts in other areas--improving command and control systems and modernizing the tactical aircraft inventory.

Purpose. This article examines two aspects of the expeditionary airfield concept--logistics support and airfield survival. A brief analysis suggests that programs that support these functions are no longer effective vis-a-vis a sophisticated enemy and are in dire need of modernization.

Function Definition. Airfield logistics, for the purpose of this article, refers to the movement of assets to the expeditionary site (embarkation) and the support necessary to sustain the operation of the airfield once established.

Airfield survival is defined as all efforts to reduce vulnerability of the expeditionary airfield before attack, and rapid recovery from damage that results from an attack.[1]

CONCEPT EVOLUTION

General. To develop the argument that existing expeditionary airfield logistical and survival methods are obsolete, it is important to briefly review the evolution of the expeditionary airfield concept.

Early Roots. The modern concept for the establishment of expeditionary airfields near the combat zone has its roots in the early years of World War II. As the United States projected combat power westward in the Pacific, Marine aviators moved their airfields westward--from secure island to secure island. Each move required the construction of a hastily developed, temporary airfield. The makeshift nature of the operation and flying

characteristics of the propeller-driven aircraft allowed for coral runways with lengths from two to three thousand feet. On some occasions, Marine and Navy engineers used wooded planking to overcome surface bearing problems.[2]

A principle ingredient for the movement of airfield support material and combat aircraft forward to a new site was the availability of amphibious shipping and engineering support for airfield construction. Availability of the logistic assets necessary to accomplish the airfield displacement mission, to a large extent, drove operational planning.

During the war, limited embarkation and construction resources motivated planners to find methods of trimming airfield logistical requirements. To reduce runway lengths, launching and arresting devices, similar to those found on aircraft carriers, were considered for expeditionary use ashore. First testing of this concept took place in 1942 at Camp Kearney, California, now the site of Naval Air Station, Miramar. Marine aviators, flying F-4U's, belonging to Marine Aircraft Group (MAG) 12, launched using a primitive carrier-type catapult device on a runway constructed of wooden planking. Testing was concluded and the catapult launch concept put in mothballs when MAG-12 deployed to the South Pacific late in 1942.[3]

The Japanese conducted airfield interdiction from the air with limited success. For protection against enemy land-based weapon systems, Marine aviators employed their aircraft in several geographically separated locations. These locations were always

planned outside of the range of enemy land-based direct and indirect fire. In the main, airfield survival was not a major operational concern when the United States began the push to the enemy's homeland.

Post-War Development Efforts. In the early 1950's, Marine Corps aviation planners in Washington started to look to future expeditionary airfield support requirements. Operational requirements of the jet aircraft, which was to become the mainstay of Marine aviation's tactical fixed-wing inventory, had be considered. Development of a short launch and recovery capability, initiated at Camp Kearney, intensified to minimize the jet's take-off and roll-out requirements.

Planning efforts culminated in 1956 when the Commandant of the Marine Corps (CMC) established a formal operational requirement (OR) for the employment of expeditionary airfields. The OR defined a requirement for providing a number of independent, rapidly moved expeditionary airfields near or on the beachhead. To minimize site preparation, the OR included a requirement to seize a World War II-type airstrip or a similar reasonably flat surface. Upon preparing the site, the OR called for construction of a 2000 ft. runway in 72 to 96 hours, using pre-manufactured aluminum planking.[4] During 1958, CMC approved the multi-site expeditionary airfield employment method--designated short airfield for tactical support (SATS) for full program development and eventual fielding.

SATS Testing. In the early 1960's, the 2nd Marine Aircraft

Wing supported the conduct of a large-scale amphibious exercise using SATS. According to after-action reports, results of that exercise proved the effectiveness of SATS and allowed the force commander the "...capability of carrying his airfield with him in order to provide more timely and effective air support to advancing infantry units."[6] Results from this exercise convinced HQMC decision makers to initiate full SATS fielding.

Components. SATS, developed as a result of a combined effort by Headquarters Marine Corps (HQMC), the Navy Bureau of Weapons and Navy Bureau of Ships, consisted of the following items:

- o pre-constructed aluminum matting (AM-2) as the principal operating surface
- o two assisted take-off devices
  - -jet assist take-off bottles (JATO), and
  - -jet powered catapult system
- o landing aids (mirror)
- o airfield expeditionary lighting
- o portable air traffic control system
- o mobile aircraft arresting device (MOREST), and,
- o associated maintenance and operational support equipment.

Capabilities. HQMC declared the newly fielded SATS employment method suitable for accommodating, on 2000 ft. of runway, the full range of modern combat and combat support-type aircraft.[6] The short runway minimized logistic support requirements

(engineering effort as well as lift); all very important ingredients for a Marine Corps to remain the premier United States 'force in readiness.'

SATS Modified. In the mid-1960's, just as SATS became available to the Fleet Marine Force, the method for its employment changed. Mounting air operations in support of the Vietnam conflict acted as the catalyst for this change. Conceptually, planners initially viewed SATS as an end in itself--a number of independent, rapidly moved airfields near or on the beachhead. To support operational requirements in South Vietnam, aviation planners looked at SATS as a means of providing a foothold operating base which could be expanded at the original site. Expansion could then accommodate a MAG or larger force as soon as operationally and logistically feasible.[7]

Foothold Method. As the Vietnam conflict intensified, tactical aviation requirements, initially supported by Marine aviation elements located at Da Nang, expanded. To introduce additional Marine aviation assets into South Vietnam, a second jet base in I Corps became necessary. A site, approximately 50 miles south of Da Nang, labeled Chu Lai by Marine Lieutenant General Krulak, was chosen. It would become the first combat expeditionary airfield using the newly devised launch and recovery systems developed under the SATS program. Naval Mobile Construction Battalion engineers (SEABEE's) began construction of an AM-2 runway and supporting facilities on 9 May 1965. On 1 June 1965, the expeditionary facility received its first combat aircraft in an arrested

landing. About 1300 the same day, the first combat mission was launched using JATO. In April 1966, a jet-powered catapult system was installed. This addition, as well as improvements to the runway and surrounding support facilities improved combat support capability.[8]

As in World War II, the enemy threat to the airfield and surrounding facilities was minimal. There was no threat from the air. Viet Cong-launched unguided rockets found their mark on the airfield and sapper attacks took place occasionally. Neither, however, had any lasting long-term effect on the conduct of air operations. The expeditionary airfield at Chu Lai served its purpose in support of combat operations. To planners, this success proved the effectiveness of the foothold employment method for the establishment of expeditionary airfields ashore.

<u>Pivotal Event</u> During the mid-1970's, a pivotal event in the evolution of expeditionary airfield concept occurred. HQMC planners deemed it necessary to eliminate the catapult launch capability. The jet-powered catapult's demise was as a result of soaring operation and maintenance costs. In addition, there existed a requirement for reducing, and in some cases realigning, associated force structure (manpower) as the Vietnam conflict slowly came to a close.

The removal of the catapult from SATS necessitated redefining expeditionary airfield runway lengths to support aviation combat requirements. Lost was the capability to launch fixed-wing aircraft within 2000 ft. of runway.

End of SATS. In 1978, HQMC formally revamped SATS. In its place, HQMC planners established a building block configuration employment method. The revised employment method validated the foothold system proven combat effective at Chu Lai. When introduced, HQMC touted the building block method as:

> '...capable of providing for rapid introduction of air support through installation of small individual aircraft forward operating sites, and expansion of those sites as necessary to a size and capability for the complete support of combat and support aviation units.'[9]

Four Sizes. The building block configuration method is the method in existence today. Its inventory includes four distinct sizes of expeditionary airfields (described below).[10]

1. VTOL Site. The vertical take-off and landing (VTOL) site, a 72 ft. by 72 ft. pad, supports forward operations close to combat. Constructed of AM-2 aluminum matting, the VTOL site accommodates one helicopter or VTOL aircraft such as the AV-8 Harrier or MV-22 Osprey. The site is used to provide medical evacuation, resupply, and with the capability of the Harrier, close air support.

2. VSTOL Facility. The vertical/short take-off and landing (VSTOL) facility is an extension of the small forward VTOL site. This facility has a 600 ft., AM-2 runway and supports up to six VSTOL aircraft at any one time.

3. VSTOL Airbase. The VSTOL airbase features an 1800 ft., AM-2 runway and expanded maintenance support capability. The VSTOL airbase provides field lighting, an advanced optical

landing system and a communication system for suitable sustained aircraft support. The airbase supports at least one squadron of VSTOL attack aircraft and up to twenty-four helicopters.

4. EAF. As air operations intensify, and as conventional take-off and landing (CTOL) aircraft are introduced ashore, the VSTOL airbase expands into the next building block, the expeditionary airfield (EAF). The EAF possesses a 5,200 ft., AM-2 runway and supports up to six squadrons of light to medium fighter/attack aircraft in addition to a complement of reconnaissance aircraft and helicopters.

5. SELF. The largest expeditionary airfield, the strategic expeditionary landing field (SELF), supports the capability for inter-theater heavy lift aircraft The SELF's 8000 ft., AM-2 runway handles CTOL requirements of the C-5, C-141 and DC-9.

Wing Allocation. Each MAW is currently allocated an EAF building block system consisting of:

- o 6 72 ft. x 72 ft. VTOL sites
- o 3 600 ft. VSTOL facilities, or,
- o 1 1800 ft. VSTOL airbase
- o 1 5200 ft. EAF, and,
- o 1 8000 ft. SELF (available to selected MAWs from contingency assets)

Current Concept for Future Employment If airfields are not available in or near the combat zone, the assets described above are employed as the ACE phases ashore. When used, extensive

logistical support is required to support all but the smaller configurations (VTOL site, VSTOL facility). As an example, approximately 160,000 cu.ft. of lift is necessary to transport AM-2 matting and field lighting required to develop a VSTOL airbase. Over 8000 man-hours are necessary for VSTOL airbase installation. An EAF requires in excess of 456,000 cu.ft. of embarkation space and over 22,000 man-hours for installation. Neither stated lift requirement includes embarkation space necessary for engineer equipment effort to support extensive site preparation, if necessary.

THE THREAT

General. Having briefly outlined the evolution of the method for employment, attention is now turned to the current threat to expeditionary airfields ashore.

Enemy Tasks. From an enemy perspective, a major task at the outbreak of hostilities is gaining control of the air by neutralizing opposing air capability. One method of quickly accomplishing this task is to attack air power on the ground or deny the use of sites suitable for operating aircraft. Degrading, or denying altogether, opposing air sortie generation capability, rather than destroying aircraft, now may be all that is needed Doing this may be far more feasible then either attempting to destroy opposing aircraft on the ground or in the air.[11]

A brief analysis, delineated below, suggests that the

Soviets have the appropriate doctrine and the weapon systems capable of denying and/or neutralizing opposing expeditionary airfield operations.

Threat Spectrum. The threat spectrum to expeditionary airfields includes a wide range of potential Soviet actions. These actions vary in size and intensity. The threat runs the gamut from local paramilitary or *spetsnaz*-type actions to direct attack by Soviet air or surface forces. Soviet use of chemical warfare (CW) in all stages of conflict has also become a highly probable response during the introduction of expeditionary forces ashore.[12]

Threat Categories. There are three principal categories of Soviet threat:

- o paramilitary/clandestine attacks
- o air-launched attacks, and,
- o surface-launched attacks (from both land and sea).[13]

1. Paramilitary/Clandestine Attacks. Externally directed and local insurgent clandestine attacks are a highly probable form of threat to the forward expeditionary airfield. The Soviets have developed specialized fighting units to carry out these covert missions. According to the Department of Defense, a specially trained naval *spetsnaz* brigade is resident in each Soviet fleet. This force complements the well publicized *spetsnaz* elements operating in support of Soviet front commanders. A naval *spetsnaz* brigade contains several combat swimmer (frogman) battalions, a midget submarine group, a parachute

group and a signals company, as well as headquarters and supporting units. These forces train to conduct reconnaissance, sabotage, and assassination missions.[14]

a. Naval *Spetsnaz*. In wartime, Soviet naval *spetsnaz* units move into the target area via aircraft, submarine, or by surface ship, just before the breakout of hostilities. Once deployed, they are targeted against potential locations for expeditionary airfields. 'Though a small force, *spetsnaz* has the potential to achieve results disproportionate to its size against such a critical, yet often vulnerable, target list,' according to a Defense Department source.[15] Recent *spetsnaz* activity includes the securing of the Kabul Airport in December 1979 in preparation for a mass landing of Soviet airborne troops. This act signaled the beginning of Soviet occupation of Afghanistan. Reports of midget submarine activity within the territorial waters of Sweden in October 1982 is a suspected naval *spetsnaz* action. These reports coincide with sightings of unknown divers appearing on the shore and lead to speculation that naval *spetsnaz* were conducting penetration exercises.[16]

b. Insurgent Attacks. Soviet sponsored insurgent attacks will likely be directed towards aircraft, stored ordnance, fuel storage areas, communication, radar and navigation facilities. These attacks will also be directed to runways and taxiways, thereby preventing aircraft from operating at critical times. Likely aircraft operation sites will also receive high target priority, with insurgent action directed towards rendering

such sites inoperable prior to occupation by the opposing force. Weapon arsenals include mortars, rocket-type weapons, and explosive/demolition charges.

2. Air-Launched Attacks. Launching of air strikes against expeditionary airfields within or adjacent the objective area is highly likely. Destructive capability of air delivered munitions has increased significantly during the last decade. Western technology has recently produced a highly effective air-launched area denial munition that is multi-functional. In addition to inflicting severe damage on runways and other operating surfaces, the munition also simultaneously deploys a carpet of mines accurately overlaying craters.[17] This action severely restrict airfield repair and recovery operations. It is reasonable to assume the Soviets have, or will soon have, similar capability.

3. Surface-Launched Attacks. Unguided rocket attacks come to mind to most planners with Vietnam experience when envisioning the surface threat to expeditionary airfields. Surface-launched weapon systems available today are more accurate and carry a much higher destructive punch then the unsophisticated devices launched against United States forces in Vietnam. Modern Soviet-styled surface-to-surface weapon systems have the potential for inflicting dehabilitating blows to expeditionary airfields. Accurate cruise missiles, with stand-off ranges from 35 upwards to 300 nautical miles can be launched from small, unobtrusive naval craft as well as from naval frigates,

destroyers and submarines. In addition, conventional gun systems with special projectile provisions, such as armor-piercing, penetration and CW agents, can be initiated from surface vessels against expeditionary airfields located near shore.

SYSTEM SHORTFALLS

Employment Method. Targeting by threat forces for attacks on airfields will depend on adequate target identification. If difficult to locate or distinguish from the air or if limited intelligence is available from other sources, a prospective target is difficult to hit. From a logistical and survivability standpoint, the smaller the size of an expeditionary airfield the better. The exclusive use of VTOL and/or VSTOL aircraft, within the objective area will allow for reduced airfield logistical requirements as well as a reduced target signature.

It is realistic to assume, however, that CTOL fighter and medium attack aircraft will be required in support of operations against a well established hostile force. The introduction of CTOL aircraft generates the requirement for longer runways (5,200 ft. or longer). The establishment of the large expeditionary airfield magnifies logistic support requirements. At the same time, the likelihood of enemy interdiction increases. On the modern battlefield, at this juncture, logistical support and survivability issues become major operational concerns.

Logistic Supportability. Issues of logistic supportability are addressed in the following terms:[10]

1. Lack of Strategic Forward Basing. Because of political reasons, there is a current lack of air facilities in strategic areas of the world to support a large amphibious operation. Nation-to-nation agreements supporting contingency use authority are tenuous at best in times of conflict. These agreements are most probably unreliable when specific crisis arise. Expeditionary airfields will be necessary to support air operations.

2. Increased Logistics Support. Modern combat aircraft have larger logistical tails than those of any previous era. A reliance on highly sophisticated aviation weapon systems requires more sophisticated support facilities. Combined, these factors create a requirement for larger, more complex and responsive aviation support facilities.

To best use aviation combat capability, it is necessary to introduce the expeditionary airfields rapidly into the operating area. The necessity for rapid introduction drives up the requirement for additional assault echelon (AE) shipping. There are, however, current limits to available AE lift during the critical D-day to D + 5 period.

3. Undefined Lift Requirement. There currently exists a wide disparity in contingency estimates for the extent of expeditionary airfield logistics support required. Current Marine Corps AE, as well as assault follow-on echelon (AFOE), planning estimates do not include lift requirements for Naval Construction Force assets needed for airfield site preparation. In

addition, AM-2 matting, field lighting and other expeditionary material is not included on any existing lift planning estimate. AM-2 runway matting and other associated expeditionary airfield equipment can be planned for AFOE delivery. AFOE delivery, however, may result in a significant delay in the ability to commence tactical aviation operations ashore.

The introduction of maritime prepositioned ships (MPS) and the development of the aviation support ship (TAVB) has significantly improved the ability to reinforce the MAGTF ashore. However, neither MPS or TAVB currently contain expeditionary airfield contingency assets. Removal of existing MPS material to improve expeditionary airfield logistical support will come at a cost of reduced warfighting capability in other functional areas.

Logistic Support Option. There exists an alternative that avoids the removal of existing assets or the cost of additional amphibious ship construction. This would be to use large ocean-going barges to support expeditionary airfield logistical requirements.[19] Barges can function as mobile prepositioned storage/support facilities for maintaining readily available, expeditionary airfield support material. The following points in favor of such an option are summarized as follows:

1. Availability. Large, multi-deck barges are successfully operated in commercial ventures. They are available for government purchase or lease. Likewise, sea-going tugs, necessary for the placement of the barge system, are commercially attainable.[20]

2. Cost Effective. Barges are highly cost-effective compared to ship construction. A large, three deck barge nominally costs 10 to 12 million dollars. A TAKR or an LSD-41 will cost nearly 50 times that amount.[21]

3. Double Duty. Barges can contain both expeditionary airfield contingency packages and Naval Construction Force equipment required to construct an airfield or repair and/or upgrade an existing site. A preliminary analysis suggests that two barges, 580 ft. long and 105 ft. wide, can carry the bulk of the engineer and airfield material requirement of an entire Marine Amphibious Force.[22]

4. Prepositioned. Once loaded, barges can be prepositioned to reduce time and effort required to establish aviation support ashore. The shallow draft, flat bottom barge allows for direct sea-to-shore interface. This characteristic eliminates the need for sophisticated port facilities or lighterage for cargo transfer.[23]

5. Flexible. Unused material can remain aboard the barge allowing for quick movement to establish other ACE facilities in other locations or support of established sites.

6. Reusable Asset. The barge platforms are reusable and available for other combat support requirements.

Airfield Survival. The ACE can no longer take the survival of its expeditionary airfields for granted. Marine Corps expeditionary airfields are currently highly vulnerable to the threats identified earlier. Specific vulnerabilities exist in:

- o parked aircraft lacking hard cover
- o lack of alternative landing or take-off surfaces suitable for modern aircraft
- o inadequate recovery capabilities in the postattack environment, specifically in repair equipment, materials, personnel training and operating procedures, and,
- o inadequate command, control and communications capability to deal effectively with the postattack environment.[24]

Programs to improve the survival of the expeditionary airfield vis-a-vis the potential threat are minimal. Current endeavors are limited to a small research and development effort programmed to examine the 'bomb crater repair problem.'[25] Passive defense measures such as deception engineering, equipment hardening and defensive facility layout techniques have not been evaluated or studied. Likewise, development efforts in the areas of airfield damage assessment and damage control techniques, to improve recovery in the post-attack period, have not been initiated.

One critic of current Marine Corps airfield survival efforts suggests that it would be '...sad if...[the Marine Corps] ignore[s]... forward air base vulnerability until disaster strikes, such as occurred in Beruit.'[26]

Lead Service Efforts. The United States Air Force has made extensive progress in improving the survival of its fixed, land-

based air facilities in recent years. As the lead service in airfield survivability (referred to as airbase survivability (ABS)), the Air Force has conducted an extensive RDT&E program in airfield damage repair (ADR). This effort has been geared primarily to the North Atlantic Treaty Organization (NATO) environment. In that arena, United States airbases are extremely vulnerable to both air and land attack.

The Air Force, in conjunction with NATO allies, has been hardening airbases over the last ten years. Aircraft have been dispersed and revetted; supporting facilities hardened; and, camouflage, concealment and deception measures employed to reduce targetability.[27]

In 1981, the Air Force initiated an ABS program coordination office at Headquarters, US Air Force, Washington D.C. ABS planning, programming and budgeting activities have fallen under the cognizance of an ABS steering committee to provide overall program policy guidance.[28]

Adapt US Air Force Concepts? A convenient, cost effective alternative to rectify Marine Corps expeditionary airfield survival shortfalls is the adoption of Air Force concepts, procedures and material. If this path is taken, marines will end up with an Air Force solution that is not responsive to the Corps' from-the-sea requirement. Although the Air Force will rely heavily on prepositioned repair and recovery material located on the airfield, Marines will have to carry their repair materials

and equipment with them. Both repair material and engineer equipment designated for Marine ADR support will have to be light and compact, or it will not get to the objective area to be of service when needed.

CONCLUSIONS

> 'Support requirements of the MAGTF...demand a flexible and responsive aviation combat element ...to meet the anticipated threat across the entire range of potential operating environments.'[29]

Support Systems Require Change. The expeditionary airfield concept is not logistically supportable or survivable on the modern battlefield. Current lift constraints will impede airfield asset arrival and construction. Threat interdiction capability will reduce operational effectiveness. Combat aircraft, fit to fight in the 21st Century, are now dependent on outdated expeditionary airfield support systems conceived for combat when friendly air supremacy was the norm.

Revitalized Efforts. Prepositioned barges can help to alleviate existing lift deficiencies. Survival shortfalls are numerous. A few have been highlighted for debate and, hopefully, eventual resolution.

The expeditionary airfield is the critical link--the 'Achilles Heel' in the accomplishment of the tactical aviation mission ashore.[30] Now is the time to move forward and develop an adequate response to the modern threat. Marine Corps planners

need to put aside perceptions from the last war and plan for the future. Let's get on with it!

NOTES

1. NCEL, Department of the Navy Airbase Survivability (ABS) Master Plan, (Pt. Hueneme: 3 July 1986), p. 1.

2. Department of the Navy, Naval Air Systems Command, Expeditionary Airfield Configuration Manual, (Washington: January 13, 1983), P. 1.

3. MSGT Joe Dodd, Instant Airfields," Navy--The Magazine of Sea Power, May 1965, P. 7.

4. LtGen Keith B. McCutcheon, USMC, "Marine Aviation in Vietnam, 1962-1970," U.S. Naval Institute Proceedings, Naval Review, 1971, p. 267.

5. WO John Kinnear, USMC, "Small Airfield for Tactical Support," Marine Corps Gazette, April 1963, p. 28.

6. Expeditionary Airfield Configuration Manual, p. 1.

7. Defense Supply Agency, The Expeditionary Airfield Concept (1976-1990), Vol I, Basic Report, (Alexandria: 1975), p. 10.

8. McCutcheon, p. 266-268.

9. Expeditionary Airfield Configuration Manual, P. 1.

10. J. Paul Trueblood, "Our Family of Expeditionary Airfields," Marine Corps Gazette, October 1981, p. 49.

11. LtCol Price T. Bingham, "Airbase Survivability and V/STOL Aircraft: A Gap in Air Force Doctrine?" Air University Review, January-February 1986, p. 52.

12. NCEL. p. 1-1.

13. Ibid.

14. James Hansen, "Soviet Vanguard Forces-Spetsnaz," National Defense, March 1986. p. 31.

15. Ibid.

16. Ibid.

17. Mark Hewish, "The JP233 Low-Level Airfield Attack Weapon System," International Defense Review, April 1984, p. 485.

NOTES (Continued)

18. Col W. Wessel, USMC (Ret) and D J Lambiotte, "Mobile Facilities for Amphibious Operations," Marine Corps Gazette, February 1986, p. 66-67.

19. Ibid, p. 68.

20. Ibid.

21. Ibid.

22. Ibid, p. 70.

23. Ibid, p. 68.

24. NCEL, p. 4.2.

25. Col W. Wessel, USMC (Ret), "Tactical Aviation's Achilles Heel?" Marine Corps Gazette, May 1986, p. 64.

26. Ibid.

27. NCEL, p. 2-9.

28. Ibid.

29. LtGen Keith A. Smith, USMC, "On Land, Sea, and in the Air: Marine Aviation FY-87 Posture Statement," Marine Corps Gazette, May 1986, p. 68.

30. Wessel, p. 64.

BIBLIOGRAPHY

Bingham, Price T., LtCol USAF, "Airbase Survivability and V/STOL Aircraft: A Gap in Air Force Doctrine?" Air University Review, January-February 1986, pp. 51-57.

Defense Supply Agency. The Expeditionary Airfield Concept (1976-1990), Vol I, Basic Report. Alexandria: June 1975.

Department of the Navy, Naval Air Systems Command. Expeditionary Airfield Configuration Manual. Washington: January 13, 1983.

Dodd, Joe, MSGT, FMCR. "Instant Airfields." Navy--The Magazine of Sea Power, May 1965, pp. 6-10.

Hansen, James. "Soviet Vanguard Forces-Spetsnaz." National Defense, March 1986, pp. 26-37.

Hewish, Mark. "The JP233 Low Level Airfield Attack Weapon System." International Defense Review, April 1984, pp. 486-488.

Kinnear, John, WO, USMC. "Small Airfield for Tactical Support." Marine Corps Gazette, April 1963, pp. 24-28.

McCutcheon, Keith B., LtGen, USMC. "Marine Aviation in Vietnam, 1962-1970." U.S. Naval Institute Proceedings, 1971, pp. 266-268.

NCEL. Department of the Navy Airbase Survivability (ABS) Master Plan. Pt Hueneme: 3 July 1986.

Smith, Keith A., LtGen, USMC. "On Land, Sea, and in the Air: Marine Aviation FY-87 Posture Statement." Marine Corps Gazette, May 1986, pp. 68-76.

Trueblood, J. Paul. "Our Family of Expeditionary Airfields." Marine Corps Gazette, pp. 46-49.

USMC. Final Report on the Development of an Operational Concept for the Marine Corps Expeditionary Airfield (EAF) System 1985-1995. Quantico: December 1985.

Wessel, W., Col USMC (Ret). "Tactical Aviation's Achilles Heel?" Marine Corps Gazette, May 1986, pp. 64.

Wessel, W., Col USMC (Ret), and Lambiotte, D. J., "Mobile Facilities for Amphibious Operations." Marine Corps Gazette, February 1986, pp. 66-72.

END

6-87

DTIC